

In the Claims:

1. A structurally enhanced liner for selectively insulating against the transmission of sound and heat energy, comprising:

a multi-layer substrate comprising an insulating layer and at least one structural layer, said structural layer comprising a reinforced composite, and said substrate being formed so as to have at least one lofted area for insulating against the transmission of sound and heat energy and at least one compacted area for structurally enhancing the liner.

2. The liner according to claim 1, wherein said substrate comprises first and second structural layers.

3. The liner according to claim 2, wherein at least one of said structural layers is formed from a reinforced composite comprising a non-woven mat including a plurality of chopped fibers and a polymeric material.

4. The liner according to claim 3, wherein said polymeric material comprises a polyvinyl chloride.

5. The liner according to claim 2, wherein the insulating layer comprises at least one of a non-woven fiber insulation layer, a phenolic-bound non-woven glass fiber mat, a polyurethane foam sheet, a needled fiber mat, and a mixture of organic and mineral fibers formed in a lofted and semi-compacted batt.

6. The liner according to claim 5, wherein the non-woven fiber

insulation layer comprises a non-woven fabric made from one or more of a polyolefin, polyester, polypropylene, rayon, aramid and cotton.

7. The liner according to claim 2, wherein said substrate has first and second lofted areas, and a first compacted area, said first lofted area having a first thickness of a first dimension, said second lofted area having a second thickness of a second dimension and said compacted area having a third thickness of a third dimension, said second dimension being greater than said first and third dimensions.

8. The liner according to claim 2, wherein said lofted area has a first thickness of a first dimension and said compacted area has a second thickness of a second dimension, said first dimension being substantially equal to about 3 to about 25 times said second dimension.

9. The liner according to claim 2, wherein said substrate comprises a hoodliner.

10. A method of manufacturing a structurally enhanced liner for selectively insulating against the transmission of ambient sound and heat energy, comprising:

forming a multi-layer substrate comprising an insulating layer of material and first and second structural layers, each said structural layer comprising a reinforced composite;

compressing one or more selected regions of the substrate to structurally enhance the liner, while leaving at least one lofted region for insulating against the transmission of sound and heat energy.

11. The method according to claim 10, wherein the step of compressing the one or more selected regions of the substrate includes placing the substrate between a pair of opposing dies that together form a contour corresponding to the desired shape of the liner.

12. The method according to claim 10, wherein the step of forming a multi-layer substrate comprises the steps of:

combining the insulating and first and second structural layers such that the insulating layer is positioned between the first and second structural layers;

heating said combined insulating and structural layers under slight pressure such that said layers laminate to one another to form said substrate.

13. The method according to claim 12, wherein said step of compressing one or more selected regions of the substrate comprises the steps of:

heating the laminated substrate;

placing the heated substrate between a pair of cold dies; and

bringing together the dies so as to compress the one or more selected regions of the substrate.

14. The method according to claim 10, wherein said steps of forming a multi-layer substrate and compressing one or more selected regions of the substrate comprise the steps of:

combining the insulating and first and second structural layers such that the insulating layer is positioned between the first and second structural layers;

heating said combined insulating and structural layers;

placing the heated layers between a pair of cold dies; and

bringing together the dies so as to laminate the layers together to form the

24975A

substrate while also compressing the one or more selected regions of the substrate.

1003948 84635001